

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (canceled)

1 Claim 2 (currently amended): A solid-state image sensing
2 apparatus ~~according to claim 1~~ comprising:
3 an effective signal photoelectric conversion unit to
4 receive object light;
5 a light-shielded reference signal photoelectric
6 conversion unit to output an optical black level equivalent
7 signal; and
8 a noise suppressing circuit which suppresses a reset
9 variation for each pixel,
10 wherein in addition to an output from the effective
11 signal photoelectric conversion unit, one of an output from
12 the reference signal photoelectric conversion unit and a
13 predetermined reference voltage is selectively output, and
14 wherein switching between the predetermined
15 reference voltage and the output from the reference signal
16 photoelectric conversion unit is done by changing a driving
17 signal of the noise suppressing circuit.

1 Claim 3 (currently amended): A solid-state image sensing
2 apparatus according to claim 12, wherein the predetermined
3 reference voltage is a voltage to be applied to the reference
4 signal photoelectric conversion unit.

1 Claim 4 (currently amended): A solid-state image sensing
2 apparatus according to claim 12, wherein the noise suppressing
3 circuit includes a switch unit which switches at least between

4 the predetermined reference voltage and the output from the
5 reference signal photoelectric conversion unit, and
6 in which whether an output signal from the reference
7 signal photoelectric conversion unit can be read out ~~can~~ and be
8 selected.

Claim 5 (canceled)

1 Claim 6 (currently amended): A solid-state image sensing
2 apparatus ~~according to claim 1~~ comprising:
3 an effective signal photoelectric conversion unit to
4 receive object light;
5 a light-shielded reference signal photoelectric
6 conversion unit to output an optical black level equivalent
7 signal; and
8 a noise suppressing circuit which suppresses a reset
9 variation for each pixel,
10 wherein in addition to an output from the effective
11 signal photoelectric conversion unit, one of an output from
12 the reference signal photoelectric conversion unit and a
13 predetermined reference voltage is selectively output,
14 wherein the noise suppressing circuit has at least a
15 clamp capacitor, a sample-and-hold switch, a clamp switch, and
16 a sample-and-hold capacitor, which are connected to each of
17 vertical signal lines extending from the effective signal
18 photoelectric conversion unit and the reference signal
19 photoelectric conversion unit, and
20 in which one of the output from the reference signal
21 photoelectric conversion unit and the predetermined reference
22 voltage is held in the sample-and-hold capacitor for the
23 reference signal photoelectric conversion unit and output by
24 driving and controlling the sample-and-hold switch and the

25 clamp switch of the vertical signal lines extending from the
26 reference signal photoelectric conversion unit.

1 Claim 7 (currently amended): A solid-state image sensing
2 apparatus ~~according to claim 1~~ comprising:
3 an effective signal photoelectric conversion unit to
4 receive object light;
5 a light-shielded reference signal photoelectric
6 conversion unit to output an optical black level equivalent
7 signal; and
8 a noise suppressing circuit which suppresses a reset
9 variation for each pixel,
10 wherein in addition to an output from the effective
11 signal photoelectric conversion unit, one of an output from
12 the reference signal photoelectric conversion unit and a
13 predetermined reference voltage is selectively output,
14 wherein the noise suppressing circuit has at least a
15 reset signal capacitor, a reset signal switch, an optical
16 signal capacitor, and an optical signal switch, which are
17 connected to each of vertical signal lines extending from the
18 effective signal photoelectric conversion unit and the
19 reference signal photoelectric conversion unit, and
20 in which in a predetermined case, both of the reset
21 signal capacitor and the optical signal capacitor are caused
22 to hold reset signal components and output the reset signal
23 components by driving and controlling the reset signal switch
24 and the optical signal switch.

1 Claim 8 (original): A solid-state image sensing apparatus
2 according to claim 7, wherein the predetermined case is a case
3 in which an incident light amount of the object light is
4 large.

1 Claim 9 (currently amended): A solid-state image sensing
2 apparatus ~~according to claim 1~~ comprising:
3 an effective signal photoelectric conversion unit to
4 receive object light;
5 a light-shielded reference signal photoelectric
6 conversion unit to output an optical black level equivalent
7 signal; and
8 a noise suppressing circuit which suppresses a reset
9 variation for each pixel,
10 wherein in addition to an output from the effective
11 signal photoelectric conversion unit, one of an output from
12 the reference signal photoelectric conversion unit and a
13 predetermined reference voltage is selectively output,
14 wherein the noise suppressing circuit has at least a
15 capacitor connected to each of vertical signal lines extending
16 from the effective signal photoelectric conversion unit and
17 the reference signal photoelectric conversion unit,
18 a first power supply line which supplies a power to
19 the effective signal photoelectric conversion unit, and
20 a second power supply line which supplies a power to
21 the reference signal photoelectric conversion unit, and
22 in which in a predetermined case, a potential of a
23 vertical signal line extending from the reference signal
24 photoelectric conversion unit is fixed to GND by the second
25 power supply line, and the predetermined reference voltage is
26 held in the capacitor extending from the reference signal
27 photoelectric conversion unit and output.

1 Claim 10 (original): A solid-state image sensing apparatus
2 according to claim 9, wherein the predetermined case is a case

3 in which an incident light amount of the object light is
4 large.

1 Claim 11 (currently amended): A solid-state image sensing
2 apparatus ~~according to claim 1~~ comprising:

3 an effective signal photoelectric conversion unit to
4 receive object light;

5 a light-shielded reference signal photoelectric
6 conversion unit to output an optical black level equivalent
7 signal; and

8 a noise suppressing circuit which suppresses a reset
9 variation for each pixel,

10 wherein in addition to an output from the effective
11 signal photoelectric conversion unit, one of an output from
12 the reference signal photoelectric conversion unit and a
13 predetermined reference voltage is selectively output,

14 which further comprises an output amplifier which
15 amplifies an output from the noise suppressing circuit, and

16 in which a signal output level of the effective
17 signal photoelectric conversion unit is corrected selectively
18 on the basis of one of a pixel signal component of the
19 reference signal photoelectric conversion unit and a reset
20 level of the output amplifier, which is different from the
21 signal component.

Claim 12 (canceled)